Plan Title:	**Governments Division Open Systems Environment**
Plan Number:	**CB-EF-94-03-E**
Plan ID:	**IT**

PART I - INFORMATION TECHNOLOGY ARCHITECTURE PLAN

1. Information Requirements

The Governments Division's primary mission is to provide statistical data on the organization, finances, and employment of state and local governments throughout the United States. This work is supplemented by our quinquennial survey of real estate properties, Taxable Property Values (TPV), as well as the Federal Assistance Awards Data Systems (FAADS), and the Consolidated Federal Funds Report (CFFR), in which we track the flow of federal expenditures.

We undertake a complete Census of Governments every five years, and as part of that, redevelop our directory of Governments (Government Organization) and conduct the TPV survey. In addition, a variety of reimbursable projects are undertaken for other Government agencies, most notably the Bureau of Justice Statistics (BJS) and the National Center for Education Statistics (NCES). Data processing for our Finance and Employment Censuses is generally equivalent to our yearly processing, except for universe vs. sample coverage (e.g., more records). Most of our projects operate on an annual basis.

Census of Governments--every 5 years a census is taken to gather benchmark data on the characteristics of the 83,000 state and local governments in the Nation. These censuses focus on the finances (revenues, expenditures, debt, and cash and security holdings) and employment of all governments, property assessments, and taxation and governmental organization structure.

Annual Surveys--to supplement census benchmark data and provide current national data, the division conducts annual sample surveys of state and local government finances and employment. The annual publications derived from the surveys depict the changes in various components of state and local governmental activity. The reports provide comparative statistics for states and sizable cities, counties, and school systems; uniformly classified nationwide totals; and state and local totals.

The data are used primarily by our major client, the Bureau of Economic Analysis for the construction of National Accounts and for statistical reports. Data on the Federal Government also are used in the administration of Federal grant programs. The data base, representing the only nationwide information covering all state and local government financial and employment activity, is also used heavily by state and local officials.

The division also conducts a variety of special studies at the request of other Federal or non-Federal organizations. In the past, these have covered such subjects as the criminal justice system, education data and government employee characteristics, and compensation.

Currently, the division collects data for the Office of Management and Budget (OMB) on all Federal domestic assistance programs and on the Federal expenditures by geographic area. The division also assists the OMB in the administration of the Single Audit Act of 1984. The division serves as the central collection point and repository - the "National Clearinghouse" - for state and local audit reports, and for reports of nonprofit organizations, prepared and submitted under provisions of the Act.

For the Department of Justice, the division maintains a national directory of justice agencies and conducts periodic censuses and surveys covering the characteristics and population of prisons, jails, and juvenile facilities, the population under probation/parole supervision, administrative statistics for law enforcement agencies, and data on sentencing outcomes in felony courts. The division also produces a special report each year on government expenditures and employment for criminal justice activities, and it is currently engaged in an effort for the Office of National Drug Control Policy to collect government expenditure for drug control activity.

Finally, the division is the data collection agent for the Education Department's "Integrated Postsecondary Education Data System" (IPEDS). IPEDS covers all postsecondary institutions in the Nation that are open to the general public. In addition, the division collects data for the Common Core of Data program and the library data program for the National Center for Education Statistics in the Education Department.

Collections of basic data for division surveys involve mail canvass; compilation from audits, budgets, and finance reports assembled in Washington; compilation in the field from official reports and accounts; and the use of machine-readable data obtained through cooperative Census-state data collection programs.

Two philosophical concepts guide the division’s information requirements. One is the concept of user ownership of data. This means that the end user should have available as much data online as needed and should be provided the tools necessary to access and manipulate the data for which the user is responsible. The second concept is that of open systems. By developing and adhering to vendor-independent system standards as much as is practical, we will be positioning ourselves to ensure that our applications function maximally and effectively, irrespective of acquired hardware platforms.

2. Planned Processing and Telecommunications Architecture

A. Current Architecture

The overall goal is to move the division into an open systems environment (OSE) guided by existing standards. The overall plan is in three phases. The first phase put in place a computing infrastructure capable of supporting the division's computing needs. The second phase migrates all processing functions from the Unisys and Digital systems to the OSE. The third phase is to redesign processing functions to take advantage of the new environment.

The first phase was accomplished in 1993. The basic components of the computing infrastructure are in place, but will require hardware and software upgrades. A full-scale network has been implemented. Small demonstration projects on-line programs (including a historical intersurvey database) are in progress.

The second phase was completed in 1995. The Annual Finance Survey (AFS) was redesigned, and implementation is in the early stages. Other smaller surveys, particularly in the Criminal Justice area, have been redesigned and rewritten into an OSE. All systems were moved from the Unisys and Digital systems to the OSE during 1995 with the exception of a small amount of cleanup work from the Census of Governments which will be finished in summer 1996 and was deemed to be not cost-effective to convert. The third phase overlaps the second phase and began in early 1995 and will be completed in 1997 or early 1998.

The Governments Division has implemented a division-wide Novell LAN with adequate storage to migrate nearly all our initial data processing applications. We also will commence some testing and benchmarking work with UNIX workstations and various graphical interfaces (GUIs).

Our initial software will involve SAS and the database Oracle (two of the most stable, portable, flexible software packages currently available). We will also be making significant use of Visual Basic and Access.

We now have the basic components in place These include a Novell LAN, 15GB of on-line storage supported by 20GB in an optical jukebox, desktop PCs, and a SUN SPARCserver. We also have basic access for transferring files to and from the VAX and Unisys systems, although VAX use has terminated and use of the Unisys will terminate this summer.

Basic end-user software, such as word processing, spreadsheet, and database, are installed on the file server and in general use.

Many of the projects currently underway have already demonstrated significant interoperability. For example, the universe directory (GID) started out as a Paradox application, it was (easily) moved to Access and will probably be moved to Oracle eventually. We are also doing things like processing in SAS on the network and easily moving between PC processing and Unix processing. Many of the projects use multiple platforms initially, eg. VAX/PC, Unisys/PC and so forth as we moved them to the network. We follow the Bureau's standards and open systems

standards in developing applications and designing the network components so that we can accomplish these kinds of interoperable operations. This has also been significant in our being able to expeditiously process data coming in on tape, or disk or over the Internet, all ways we now collect data.

B. Alternatives

The selection of hardware is based on the following goals:

- Network will be standards-based
- Hardware and software systems for the network will be centralized
- Users will interface through a PC to a networked system
- Division-wide applications will be managed network-wide
  - Word processing
  - Electronic Mail
  - Spreadsheet
  - Database
- Nondivision-wide applications will be managed locally
- Backup and network security will be managed centrally
- Network will feature a wide variety of interoperable devices available for programming, processing, and access for analysis and other uses

C. Proposed Architecture

The underlying architecture--that of a network based on open systems standards--is both adequate for current needs, and flexible enough to incorporate changing requirements. Within this basic architecture, incremental changes in the components will accommodate the following trends:

- Initial efforts concentrated on moving data processing applications off the Unisys mainframe as fast as possible. As these processes are redesigned to take advantage of the benefits of a network with interactive access to data, many of the applications are migrating to a client-server database environment.

- On-line access to more current and historical data is becoming available, necessitating more on-line storage.
- Overall management of system resources is improving, in turn bringing requirements for equipment such as backup and printing facilities.

- Use of the division's intra-net facilities for information sharing and collaboration within the division is increasing.

- Migration of the division's desktop systems to a 32-bit operating system, such as Windows 95 or Windows/NT

- Increased use of interactive access to data, and more and faster computing equipment, place a larger load on the network, and network bandwidth will have to increase.

D. Benefits

The major benefits in moving toward open systems are improved and more timely data products. These benefits are achieved by implementing the following changes:

1. Data processing control is as decentralized as possible so that data managers (owners) can control their own processing resources and schedules. Reliance on computer programmers for all aspects of data processing causes deadlines to be missed, resulting in data products that are released later than they should be.

2. Applications are developed in modular, reusable forms using standard system operations, methods, and components across the division. Duplication of programming effort is minimized and eventually eliminated.

3. Applications are accessed and executed as close to the data manager (owner) as possible, giving the data manager flexibility in processing and timing.

4. Systems (hardware and software) are becoming as vendor independent as practicable, minimizing the need for reprogramming when hardware platforms change.

5. Analysts can access devices and data on the network from personal computers (PC and/or workstations). Having this access, along with software tools for analysis, makes them more productive and able to respond to requests for data products in a more timely basis.

6. Analysts have a common graphical interface, allowing for a more intuitive understanding of applications, and minimizing the need for retraining when assigned to new applications.

7. Analysts have access to division standard applications, but can use local applications after certification that they meet minimum criteria for openness. Analysts have developed a comfort level with certain software packages, and the continued use of these packages will enhance productivity.

8. Data managers (owners) will be responsible for maintaining the content integrity of their data. Giving the analysts full ownership of their data should increase the quality of the data. System integrity and security will still be overseen by the network administration group.

Making the decision to move to an open systems environment is a long-term proposition. We expect that we will be upgrading in a gradual, incremental manner, rather than changing hardware platforms wholesale and all at once. From year to year, there may not be large differences in the platform, but over longer periods of time all aspects are expected to change.

3. Security

Most Governments Division data are not subject to Title 13, United States Code. The division is located in Washington Plaza. The physical security of the building will provide basic security for the hardware. Current interactive telecommunication security arrangements should be adequate for all system telecommunications assets. Back up systems and uninterruptible power supplies are also in place.

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PART II - ANNUAL PLAN

1. Architecture Status

The architecture described in Part I provides the basis for a constant, slow, incremental change of the network and network systems over time. This growth will be dictated by changes in technology and the availability and functionality of systems software and applications software. We do not anticipate that major system changes will be necessary. But, because of small, incremental changes, the architecture may look significantly different over a period of time. There are no major purchases anticipated in the next few years, only updating the technology and software. There are no major service contracts in use or anticipated. Maintenance is done on an "as needed" basis at cost.

2. IT Objectives

Goals for the next year include tuning the network systems and applications, improving service to the users in terms of timeliness and accuracy, and assuring secure computing systems. Specific strategic objectives that will be addressed over the next two years include the following:

- Continued migration of data processing systems to a client-server database environment, along with a migration of resources from general-purpose file servers to database servers.
- Increasing available storage to allow on-line access to more current and historical data.
- Improving backup, including backup of local workstations.
- Increasing the use of the division's intra-net facilities for information sharing and collaboration within the division.
- Migration of the division's desktop systems to a 32-bit operating system, such as Windows 95 or Windows/NT.

3. Status

A. Accomplishments/Progress

Much significant progress has been made since the plan was initiated.. The division went from an almost entirely mainframe system to a nearly total PC-based networked system. Three years ago, the division had 6 PCs in the entire division and an infant network. Today there are over 120 PCs networked to every staff member, all of which are 486 systems or better. Storage went from zero to over 25 Gigabytes, servers went from none to five, the network is 10BaseT ethernet where no network existed before.

More importantly, nearly $1 million was saved, the programming staff was reduced (through attrition) by 15 percent, major and minor applications are being developed and implemented in fractions of the time it took previously. Analysts now have control of the data, rather than the data processors, their work has been speeded up also as a result, allowing them more time for better analysis, getting their data to sponsors in a higher quality and more timely state.

The cost of all this has not been more than a typical division spends on maintenance, acquisition and updating their systems, and is a lot less than what the division had been paying for use of the mainframes. Turnaround time has also been immensely improved using the network systems rather than the mainfame.

All of this is heavily documented in the reports on the development of the open systems environment in the division and the reports on the Open Systems Testbed.

B. Current Plans

Basically, this IT Plan calls for the constant, incremental updating of the network systems hardware and for the systems and applications software. This methodology is now being put in place and implemented. The amounts being proposed are for upgrading and replacing servers, storage and software for the network, as well as updating PCs and peripheral hardware such as printers, scanners, CD-ROM recorders and players and the like. The continuing objective is to provide better data in a more timely manner, provide easy, powerful systems for access to our data, and to continue to give ownership of the data to the data user.

Using PCs, the network and powerful off-the-shelf applications software has already begun to allow us to reach these goals. A continued effort in this direction will be the basis for achieving them.

Incremental changes planned over the next three years include:

- Addition of one or more Oracle database servers as more processing is migrated to a database environment. As part of this process, the work on the two IPEDS servers will first be consolidated onto one new server and then moved to a database environment, and those two servers retired.
- Storage will be increased to make more historical data available on-line.
- New computing servers will be added to provide faster processing of batch jobs.
- PCs will continue to be upgraded on a planned 3-year cycle.
- One or more backup devices will be needed to backup the new database servers.
- Desktop laser printers are being consolidated into high-volume network printers.
- Increased use of interactive access to data, and more and faster computing equipment, place a larger load on the network. Network bandwidth will have to be increased through a faster network or switching device.
- Various initiatives for data collection via the internet, undertaken jointly with the National Center for Education Statistics, will require additional servers.
- A T-1 line has been installed to connect the Bureau with NCES. A server is being acquired to serve as shared storage accessible through the T-1 line.

4. Implementation Schedule

As noted previously, the plan is a continuous, incremental improvement of existing equipment and software.

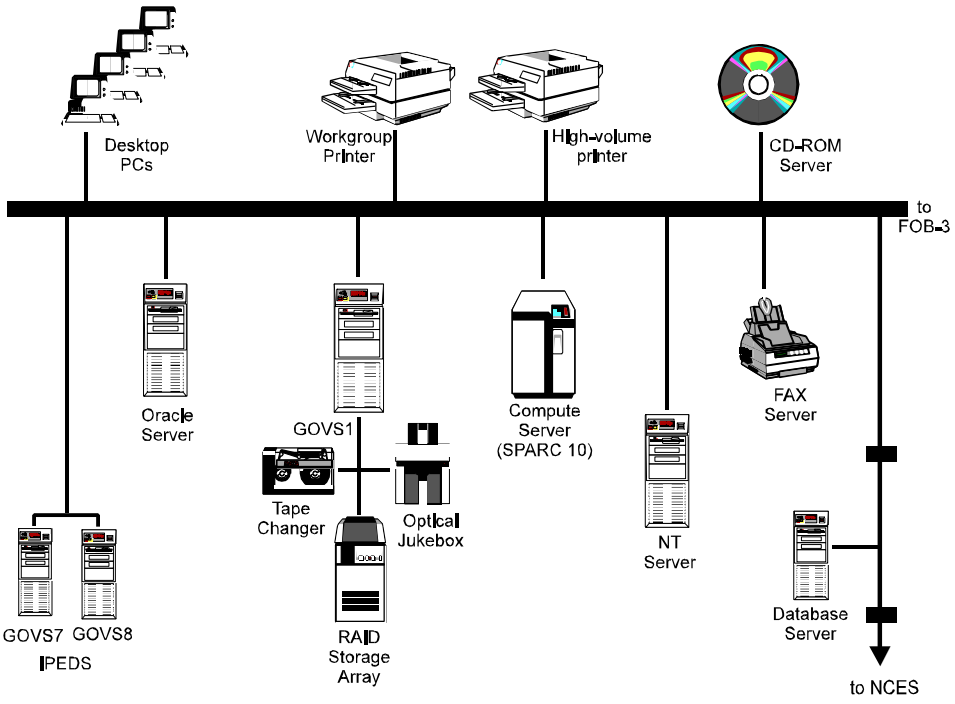
Milestone	Start	Complete
Prepare Procurement Request	02/97	03/97
Acquire Equipment Upgrade	05/97	06/967
Prepare Procurement Request	02/98	03/98
Acquire Equipment Upgrade	05/98	06/98
Prepare Procurement Request	02/99	03/99
Acquire Equipment Upgrade	05/99	06/99

5. Acquisitions

Actual and Planned Acquisitions			
Type of Equipment	Acquired FY 1996	Planned FY 1997	Planned FY 1998
Personal Computers	40	45	45

Actual and Planned Acquisitions			
Type of Equipment	Acquired FY 1996	Planned FY 1997	Planned FY 1998
PCs, Macs, Power PCs used as servers	3	2	2
Laptops/Notebooks	2	4	4
Laser Printers, B/W	2	2	2
Scanners	0	6	4
Tape Drives	1	1	1
Disk Storage Units	1	1	1

Governments Division Survey Processing Configuration



Governments Division
Authorized Project List - FY 1996

Interfund

0567 Program and Processing Divisions
0979 Small Federal Jobs Under $5000
0913 Single Audit
0914 CFFR

Salaries and Expenses

1372 Government Finance Operations
1373 Government Employment
1374 Quarterly Survey of Tax Revenue
1382 Formula Grant Data - Governments
1385 Federal Assistance Award Data
1387 Consolidated Federal Funds Report
1388 Salaries and Expenses Division Support

1997 Census of Governments

3910 Government Finance - Direction
3911 Government Finance - Content Determination
3912 Government Finance - Mail List Development
3920 Employment - Direction
3921 Employment - Content Determination
3922 Employment - Mail List Development
3930 Government Organization - Direction
3931 Government Organization - Content Determination
3932 Government Organization - Mail List Development
3940 Taxable Property Values - Direction
3941 Taxable Property Values - Content Determination
3942 Taxable property Values - Mail List development
3943 Taxable property Values - Collection and Processing
3953 Census Division Support

Reimbursables

7154 School Finance Format
7170 96 IPEDS

7171 95 IPEDS
7176 Federal Libraries
7178 National Common Core of Data
7179 Public Library Survey Evaluation
7185 National Public Education Finance Survey
7189 Public Library Survey Processing
7196 State Library Agency Survey
7201 Graduation Rate Survey
7522 National Judicial Reporting Program
7531 Juveniles Taken into Custody
7534 National Juvenile Directory Program
7537 Annual Jail Survey
7540 Children in Custody
7544 LEMAS
7548 State and Federal Correctional Statistics program
7549 CJ Expenditure and Employment
7550 Justice Agency List

9010 Trust Funds Under $5000